

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

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D1
1. (Currently Amended) A semiconductor device comprising:
a pixel matrix circuit including at least a plurality of source lines, a plurality of gate lines;
a driver circuit including at least a source line driver circuit for driving the source lines
and a gate line driver circuit for driving the gate lines; and
a logic circuit for processing a signal required for driving the driver circuit and a signal
including image information transmitted to the pixel matrix circuit,
wherein the pixel matrix circuit, the driver circuit and the logic circuit are disposed over a
same substrate,
wherein the pixel matrix circuit, the driver circuit, and the logic circuit are constituted by
a plurality of thin film transistors, each having an active layer comprising crystalline silicon, and
wherein the active layer of each of said plurality of thin film transistors comprise a
plurality of rod-shaped crystals extending in one direction, and
wherein the logic circuit includes one or more of a phase comparator, a LPF (low pass
filter), a VCO (voltage controlled oscillator), a frequency divider, a horizontal scanning
oscillator, a vertical scanning oscillator, a D/A converter, an I/O port, a differential amplifier, an
operational amplifier, a comparator and a memory.
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2. (Original) A semiconductor device according to claim 1 wherein crystal lattices said
plurality of rod-shaped crystals are continuous within each of the active layer so that there is no
barrier for carriers within each of the active layer.
3. (Original) A semiconductor device according to claim 1 wherein said device is a
liquid crystal display.

4. (Original) A semiconductor device according to claim 1 wherein said rod-shaped crystals have a flattened shape.

5. (Original) A semiconductor device according to claim 1 wherein said active layer has an anisotropy between a channel length direction and a channel width direction thereof.

6. (Original) A semiconductor device according to claim 1 wherein said active layer includes an intrinsic or substantially intrinsic channel forming region.

bv 7. (Original) A semiconductor device according to claim 1 wherein said active layer contains an element selected from the group consisting of Ni, Fe, Co, Sn, Pd, Pb, Pt, Cu and Au at a concentration 1×10^{17} atoms/cm³ or lower, said element being capable of promoting crystallization of silicon.

8. (Original) A semiconductor device according to claim 1 wherein said active layer contains an element selected from the group consisting of Cl, F, and Br at a concentration from 1×10^{15} to 1×10^{20} atoms/cm³.

9. (Original) A semiconductor device according to claim 8 wherein said element is concentrated at a portion close to a gate insulating film.

10. (Original) A semiconductor device according to claim 1 wherein said pixel matrix circuit has a plurality of pixels, and each of said pixels is provided with at least two of said plurality of thin film transistors connected in series.

11. (Original) A semiconductor device according to claim 1 wherein said pixel circuit has a plurality of pixels, each of which is provided with a storage capacitor formed between a connect wiring and a black mask.

12. (Original) A semiconductor device according to claim 11 further comprising an organic film having an opening wherein said black mask is formed on said organic film and said storage capacitor is formed within said opening.

13. (Original) A semiconductor device according to claim 11 wherein said connect wiring comprises a same material as a source electrode of each of said thin film transistors, and said connect wiring is formed from a same layer as said source electrode.

14. (Original) A semiconductor device according to claim 1 wherein one of said thin film transistors constituting said pixel matrix circuit has a different dimension from one of said thin film transistors constituting at least one of said driver circuit and said logic circuit.

15. (Cancelled)

16. (Currently Amended) A semiconductor device comprising:

a pixel circuit;

a driver circuit for driving said pixel circuit; and

a logic circuit for processing a signal required for driving the driver circuit, wherein said pixel circuit, said driver circuit and said logic circuit are formed over a same substrate and constituted with a plurality of N-channel type thin film transistors and a plurality of P-channel type thin film transistors;

wherein subthreshold coefficients of said N-channel thin film transistors and said P-channel thin film transistors are both within a range of 60 to 100 mV/decade, and

wherein the logic circuit includes at least one selected from the group consisting of a phase comparator, a low pass filter, a voltage controlled oscillator, a frequency divider, an oscillator for a source line driver and an oscillator for a gate line driver.

17. (Original) A semiconductor device according to claim 16 wherein said pixel circuit has a plurality of pixels arrayed in rows and columns.

18. (Currently Amended) A semiconductor device comprising:
a pixel matrix circuit including at least a plurality of source lines, a plurality of gate lines;
a driver circuit including at least a source line driver circuit for driving the source lines
and a gate line driver circuit for driving the gate lines; and
a logic circuit for processing a signal required for driving the driver circuit and a signal
including image information transmitted to the pixel matrix circuit,
wherein the pixel matrix circuit, the driver circuit and the logic circuit are disposed over a
same substrate,
wherein the pixel matrix circuit, the driver circuit, and the logic circuit are constituted by
a plurality of thin film transistors, each having an active layer comprising crystalline silicon,
[and]
wherein dimensions of said plurality of thin film transistors are made different depending
upon required electrical characteristics by said circuits, and
wherein the logic circuit includes at least one selected from the group consisting of a
phase comparator, a low pass filter, a voltage controlled oscillator, a frequency divider, an
oscillator for a source line driver and an oscillator for a gate line driver.

19. (Original) A semiconductor device according to claim 18 wherein said dimensions
include at least one of a channel length and a thickness of a gate insulating film.

20. (Currently Amended) A semiconductor device comprising:
a pixel matrix circuit including at least a plurality of source lines, a plurality of gate lines;
a driver circuit including at least a source line driver circuit for driving the source lines
and a gate line driver circuit for driving the gate lines; and
a logic circuit for processing a signal required for driving the driver circuit and a signal
including image information transmitted to the pixel matrix circuit,
wherein the pixel matrix circuit, the driver circuit and the logic circuit are disposed over a
same substrate,

wherein the pixel matrix circuit, the driver circuit, and the logic circuit are constituted by a plurality of thin film transistors, each having an active layer comprising crystalline silicon, [and]

wherein a thickness of a gate insulating film of the thin film transistors which are required to drive a circuit at 0.1 GHz or higher is 500Å or thinner, and a thickness of a gate insulating film of the thin film transistors which are driven by an operation voltage of 10V or greater is 1000Å or thicker, and

wherein the logic circuit includes at least one selected from the group consisting of a phase comparator, a low pass filter, a voltage controlled oscillator, a frequency divider, an oscillator for a source line driver and an oscillator for a gate line driver.

21. (Currently Amended) An active matrix display comprising:

a pixel matrix circuit including at least a plurality of source lines, a plurality of gate lines, and a plurality of TFTs;

a driver circuit including at least a source line driver circuit for driving the source lines and a gate line driver circuit for driving the gate lines; and

a logic circuit for processing a signal required for driving the driver circuit and a signal including image information transmitted to the pixel matrix circuit,

wherein the pixel matrix circuit, the driver circuit and the logic circuit are disposed ~~on~~ over the same substrate,

wherein the pixel matrix circuit, the driver circuit, and the logic circuit are constituted by a plurality of TFTs each made of a crystalline silicon thin film, [and]

wherein a plurality of circuits constituting the pixel matrix circuit, the driver circuit and the logic circuit include at least two kinds of circuits which are different from each other in at least one of a driving frequency and/or and an operating voltage, and

wherein the logic circuit includes at least one selected from the group consisting of a phase comparator, a low pass filter, a voltage controlled oscillator, a frequency divider, an oscillator for a source line driver and an oscillator for a gate line driver.

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22. (New) The semiconductor device according to claim 1 wherein said semiconductor device is an EL display.

23. (New) The semiconductor device according to claim 16 wherein said semiconductor device is an EL display.

br 24. (New) The semiconductor device according to claim 18 wherein said semiconductor device is an EL display.

25. (New) The semiconductor device according to claim 20 wherein said semiconductor device is an EL display.

26. (New) The active matrix display according to claim 21 wherein said semiconductor device is an EL display.
